WHAT IS CLAIMED IS:

1. A unipolar drive, comprising:

a booster comprising a first transistor, a first capacitor coupled to a first transistor terminal of the first transistor, and a first inductor coupled to the first capacitor and the first transistor terminal of the first transistor;

an energy storage module coupled to the booster, the energy storage module comprising a second inductor coupled to the first capacitor, a second capacitor connected coupled to the second inductor at a first capacitor terminal of the second capacitor, and a first diode coupled to a second transistor terminal of the first transistor and a second capacitor terminal of the second capacitor, wherein the energy storage module is operable to transfer energy from the second capacitor to the booster using the first diode;

a unipolar inverter, comprising:

a plurality of windings for a motor;

a plurality of second transistors, each second transistor connected in series to one of the windings, and each second transistor operable to cause the respective winding to be energized; and

a plurality of second diodes, each second diode coupled to one of the windings between the respective winding and the transistor in series with the winding, and each second diode operable to return energy from the respective winding to the energy storage module and the booster when the respective winding is not being energized;

a voltage comparator operable to control the first transistor based on a comparison between an output voltage of the booster and a reference voltage; and

a hysteresis comparator operable to control the second transistors based on a comparison between a reference frequency and a measured frequency of a motor driven by the unipolar drive.

2. A unipolar drive, comprising:

a booster operable to increase a voltage received from a power supply to produce an energy output;

an energy storage module operable to store at least some of the energy output by the booster; and

a unipolar inverter operable to energize windings of a motor using energy from the booster, wherein the unipolar inverter is further operable to return energy from the windings to the booster when the windings are not being energized.

3. The unipolar drive of Claim 2, wherein the booster comprises:

a transistor operable to receive a DC voltage;

a capacitor coupled to the transistor; and

an inductor coupled to the transistor and the capacitor.

4. The unipolar drive of Claim 3, further comprising a voltage comparator coupled to the booster, the voltage comparator operable to:

compare an output voltage of the booster to a reference voltage; and

control the transistor of the booster based on the comparison.

5. The unipolar drive of Claim 2, wherein the energy storage module comprises:

an inductor;

a capacitor coupled to the inductor; and

a diode coupled to the capacitor and the booster operable to carry energy from the capacitor to the booster.

6. The unipolar drive of Claim 2, wherein the unipolar inverter comprises:

a plurality of transistors, each transistor coupled to a winding of the motor, and each transistor operable to cause the respective winding to become energized; and

a plurality of diodes, each diode coupled to one of the windings, and each diode operable to carry energy from the windings to the booster when the windings are not being energized.

7. The unipolar drive of Claim 6, further comprising a hysteresis comparator coupled to the transistors, the hysteresis comparator operable to:

compare a frequency of the motor to a reference frequency; and

control the transistors based on the comparison.

8. The unipolar drive of Claim 2, wherein:

the power supply provides an AC voltage to the unipolar drive; and

the unipolar drive further comprises a rectifier operable to transform the AC voltage into a DC voltage.

9. A method for driving a motor, comprising:

receiving a voltage input from a power supply;

boosting the voltage received from the power supply;

energizing windings of the motor using the boosted voltage;

storing at least some of the energy not used by the windings to excite the motor; and

when the windings are not being energized, returning at least some of the energy stored in the windings to the booster.

10. The method of Claim 9, wherein the boosting step is performed by a booster comprising:

a transistor;

a capacitor coupled to the transistor; and

an inductor coupled to the transistor and the capacitor.

11. The method of Claim 10, further comprising:

monitoring an output voltage of the booster;

comparing the output voltage to a reference voltage; and

controlling the transistor to adjust the output voltage of the booster based on the comparison.

12. The method of Claim 9, wherein the energy is stored in an energy storage module, comprising:

an inductor;

a capacitor coupled to the inductor; and

a diode coupled to the capacitor and the booster operable to carry energy from the capacitor to the booster

13. The method of Claim 9, wherein:

the energizing step is controlled by a plurality of transistors; and

the returning step is performed using a plurality of diodes coupled to the windings.

14. The method of Claim 13, further comprising:

monitoring a rotation frequency for the motor;

comparing the rotation frequency to a reference frequency; and

controlling the transistors based on the comparison.

15. The method of Claim 9, wherein:

the power supply supplies an AC voltage; and

the method further comprises rectifying the AC voltage to produce a DC voltage.

16. A unipolar drive, comprising:

a plurality of windings for a motor;

a plurality of first transistors, each transistor coupled to one of the windings and operable to energize the respective winding;

a plurality of first diodes, each diode coupled to one of the windings;

an energy storage module comprising a first capacitor, a first inductor, and a second diode; and

a booster coupled to the first diodes and the second diode, the booster comprising a second transistor, a second capacitor and a second inductor, wherein the booster is operable to receive energy from the windings and the energy storage module using the first diodes and the second diode respectively.

17. The unipolar drive of Claim 16, further comprising a rectifier coupled to the booster, the rectifier comprising a diode bridge.

18. The unipolar drive of Claim 16, further comprising a voltage comparator operable to control the second transistor based on a comparison of an output voltage of the booster to a reference voltage.

19. The unipolar drive of Claim 16, further comprising a hysteresis comparator operable to control the first transistors based on a comparison of a rotation frequency of the motor to a reference frequency.

20. The unipolar drive of Claim 16, wherein there are exactly three windings for the motor, exactly one first transistor coupled to each winding, and exactly one first diode coupled to each winding.

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